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SPECIFICATION FOR TAPER BARRELLED DELIVERY SPOOL FOR COVERED ROUND ELECTRICAL WINDING WIRES

UDC 621·3·046 : 621·315·3 : 621·3·045

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SPECIFICATION FOR TAPER BARRELLED DELIVERY SPOOL FOR COVERED ROUND ELECTRICAL WINDING WIRES

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Indian Standard

SPECIFICATION FOR TAPER BARRELLED DELIVERY SPOOL FOR COVERED ROUND ELECTRICAL WINDING WIRES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 14 December 1981, after the draft finalized by the Winding Wires Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 Taper barralled spools are suitable for large weight packaging of fine size winding wires. The larger weight packaging reduces end rejections. The tapered construction prevents jumbling of wire during transport and handling and windability is improved in high speed vertical pay off systems.

0.3 In preparing this standard, assistance has been derived from IEC Pub 264-3 (1973) 'Packaging of winding wires : Part III Taper barrelled delivery spools for winding wires' issued by the International Electrotechnical Commission.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places ratained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard specifies the requirements regarding materials, construction, dimensions, tolerances, eccentricity and sizes for spools for covered round wires for winding electrical machinery and apparatus.

1.2 The spools made of plastic materials are only covered in this standard.

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*Rules for rounding off numerical values (*revised*).

2. MATERIALS AND CONSTRUCTION

2.1 The plastic materials used in construction of the spools shall have the required mechanical strength so that the spools do not warp in actual use or in storage. The material shall have no deleterious effect on the fibres, enamel or other coverings of the wires.

2.2 The plastic material and spool flanges design (by providing necessary ribs etc) shall be such that the spool should be able to withstand a breaking stress of minimum 6 MN/m^2 when pulled slowly at a rate of approximately 300 mm/minute after clamping the flanges properly.

2.3 No portion of the spool shall warp when kept in an air-oven at 70 ± 3°C for one hour.

2.4 The colour of the spool shall be sufficiently stable.

2.5 The flanges and the barrel shall be smooth and free from protruding material capable of damaging the wire or the hands of the winding operator during rotation of spools. The inner side of the flanges which may come in contact with the wire shall be sufficiently smooth to avoid entangling the wire during withdrawal.

2.6 All the spools shall be provided with a recess of adequate depth to accommodate the label and at least one lead-through hole.

2.7 The unbalance and axial throw of the flanges shall be negligible.

3. DIMENSIONS AND TOLERANCES

3.1 The dimensions and tolerances of the spool shall be in accordance with Table 1.

3.2 The bore of spool shall be coned to an included angle of 60° and shall be as shown in dimensional drawing (*see* Fig. 1).

NOTE — The drawing is given only to identify the dimension specified and is not intended to show any particular construction.

4. TYPE DESIGNATION

4.1 Delivery spools shall be referred by dimensions d_1 and l_1 in the following manner :

d_1 = 250 mm
l_1 = 400 mm

Type designation IS 250/400

TABLE 1 SIZE AND TOLERANCES OF TAPER BARRELLED DELIVERY SPOOLS

(*Clause* 3.1)

All dimensions in millimetres.

DIMENSIONS		TYPE (d_1/l_1)						
		100/155	125/196	160/250	200/315	250/400	315/500	400/630
Flange diameter	d_1	100 ± 1·0	125 ± 1·0	160 ± 1·0	200 ± 1·0	250 ± 1·0	315 ± 1·2	400 ± 1·4
Flange diameter	d_9	94 ± 1·0	118 ± 1·0	150 ± 1·0	190 ± 1·0	236 ± 1·0	300 ± 1·2	375 ± 1·4
Core diameter	d_2	63 ± 0·5	80 ± 0·5	100 ± 0·5	125 ± 0·5	160 ± 0·8	200 ± 1·2	250 ± 1·6
Core diameter	d_{10}	57 ± 0·5	72 ± 0·5	90 ± 0·5	112 ± 0·5	140 ± 0·8	180 ± 1·2	224 ± 1·6
Centre hole diameter	d_3	22 + 0·2 − 0·0	22 + 0·2 − 0·0	22 + 0·2 − 0·0	100 + 0·5 − 0·0	100 + 0·5 − 0·0	100 + 0·5 − 0·0	100 + 0·5 − 0·0
Centre hole diameter	d_4	23 + 0·2 − 0·0	23 + 0·2 − 0·0	23 + 0·2 − 0·0	106 + 0·5 − 0·0	106 + 0·5 − 0·0	106 + 0·5 − 0·0	106 + 0·5 − 0·0
Attaching hole diameter	d_5	13	13	13	16	16	16	16
Attaching hole distance	d_{11}	40	40	40	126	126	126	126
Feed through hole	d_6	3	3	3	4	4	5	6
Diameter of coil	d_7	93	116	148	185	230	295	370
Diameter of coil	d_8	90	103	135	170	216	280	345
Total length	L_1	155	196	250	315	400	500	630
Winding length	L_2	130 ± 0·2	165 ± 0·3	210 ± 0·5	265 ± 0·5	335 ± 0·5	425 ± 0·5	530 ± 0·5
Depth attaching hole	L_3	12	12	12	12	15	20	30
Depth centre hole	L_4	50	80	80	120	120	120	120
Minimum radius	r	3	3	3	3	3	3	3
Net volume cm^3 (approx)		465	900	1 900	3 850	7 150	15 500	30 000
Max wire weight kgs (approx)		3	5·7	12	25	45	90	190

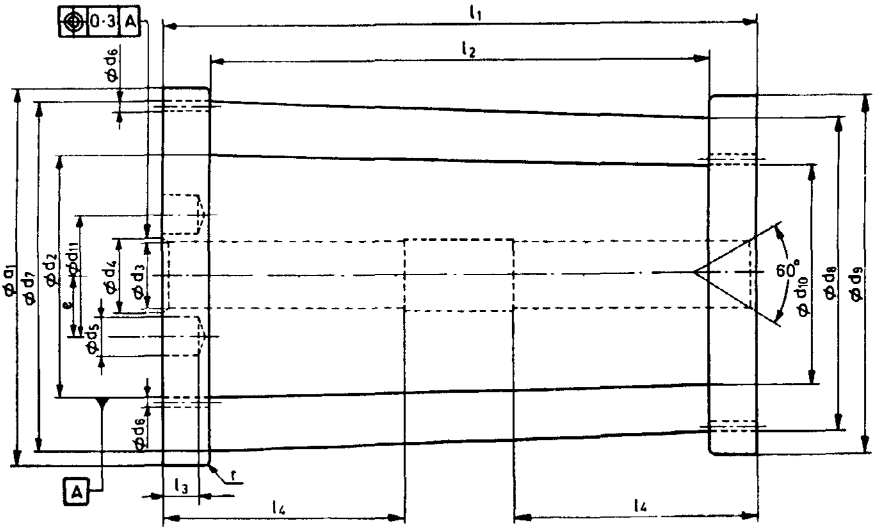

FIG. 1 TAPER BARRELLED DELIVERY SPOOL

5. MARKING

5.1 The identification number and manufacturers' name or recognised trade-mark shall be clearly marked on one or both flanges of the spool.

5.1.1 The spools may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.